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(54) Title: IMPROVED METHODS AND MATERIALS FOR REDUCING PRODUCTION OF ABERRANT PRODUCTS DURING RNA SYNTHESIS

(57) Abstract: The mutant T7, T3 and SP6 RNA polymerase enzymes have a number of novel properties that would be desirable for those who wish to use the phage RNAP to synthesize homogeneous RNA products. These includes: reduced synthesis of aberrant products on templates that have protruding 3' ends in the non-template strand, decreased addition of a non-templated nucleotide to the 3' end of transcript; increased yields of products on templates that terminate in a G:c-rich context. The mutations include deletions at positions 172 and 173 of the T7 RNA polymerase, deletions at positions 140-143 of the SP6 RNA polymerase and deletions at positions 173 and 174 of the T3 RNA polymerase.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/39087

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C07K 1/00; C12Q 1/68, 1/34; C12P 19/34; C07H 21/02
 US CL : 530/350; 435/6, 18, 91.2; 536/23.1

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 530/350; 435/6, 18, 91.2; 536/23.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	LYAKHOV et al. Mutant bacteriophage T7 RNA polymerases with altered termination properties. J. Mol. Biol. 1997, Vol. 269, pages 28-40, see entire document.	1-6, 8-14
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Y		7, 15
X	GOPAL et al. Characterization of structural features important for T7 RNAP elongation complex stability reveals competing complex conformations and a role for the non-template strand in RNA displacement. J. Mol. Biol. 1999, Vol 290, pages 411-431, see entire document.	1-5, 8-13
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Y		6, 7, 14, 15
X, P	EP 1 403 364 A1 (NIPPON GENETECH CO. LTD.) 19 December 2002 (19.12.2002), page 7, lines 5-55.	1-15
Y, P	US 6,524,828 B1 (LIAO et al) 25 February 2003 (25.02.2003), see entire document.	1-15

<input type="checkbox"/>	Further documents are listed in the continuation of Box C.	<input type="checkbox"/>	See patent family annex.
*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"B"	earlier application or patent published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search

20 July 2004 (20.07.2004)

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INTERNATIONAL SEARCH REPORT

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Continuation of B. FIELDS SEARCHED Item 3:

EAST, DERWENT, MEDLINE, BIOSIS, CAPLUS

search terms: RNA, polymerase, mutants, variants, polymorphisms, alleles, T7, SP6, T3, 173, 174, 172, 140, 143, deletion.